

Message Text

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TAGS: TSPA, UR

SUBJECT: SPACE AGREEMENT: SPACE BIOLOGY AND MEDICINE
(04.05.02)

FOR SCICOUN

1. PLEASE PASS THE FOLLOWING MESSAGE FROM WINTER TO
GUROVSKY WITH A COPY TO INTERCOSMOS.

2. MARCH 9, 1978 04.05.02

DR. NIKOLAI N. GUROVSKY
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CHAIRMAN OF THE SOVIET WORKING GROUP
ON SPACE BIOLOGY AND MEDICINE
CHIEF OF THE DEPARTMENT OF SPACE
BIOLOGY AND MEDICINE
THIRD MAIN ADMINISTRATION
USSR MINISTRY OF HEALTH
MOSCOW, USSR

DEAR DR. GUROVSKY:

DURING THE EIGHTH MEETING OF THE JOINT US/USSR WORKING

GROUP ON SPACE BIOLOGY AND MEDICINE, THE U.S. SIDE TRANSMITTED TO THE SOVIET SIDE AN EXTENSIVE LIST OF TECHNICAL QUESTIONS IN CONNECTION WITH KOSMOS-936. ABOUT HALF OF THE QUESTIONS WERE ANSWERED DURING THE MEETING, AND THE REMAINING QUESTIONS APPEAR TO HAVE BEEN ANSWERED IN YOUR LETTER OF FEBRUARY 3, 1978 WHICH IS NOW BEING TRANSLATED.

SINCE THE NOVEMBER 1977 MEETING, A NUMBER OF NEW QUESTIONS HAVE ARISEN WITH REGARD TO BOTH KOSMOS-936 AND KOSMOS 1980 BIOSATELLITE 5. THESE QUESTIONS ARE LISTED BELOW. RESPONSE TO THE KOSMOS 1980 QUESTIONS ARE NEEDED BY MARCH 17 IN ORDER TO ADVISE POTENTIAL US INVESTIGATORS REGARDING CONSTRAINTS ON THEIR PROPOSALS PRIOR TO SCIENTIFIC PEER REVIEW SO THAT THEY CAN PROPOSE MEANINGFUL EXPERIMENTS FOR FLIGHT ON YOUR BIOSATELLITE.

A CABLE RESPONSE IS PREFERABLE, HOWEVER, SHOULD IT PROVE MORE EXPEDIENT WE COULD DISCUSS THE ANSWERS IN A TELECON. IF THIS IS THE CASE, WE WOULD BE PREPARED TO PLACE A PHONE CALL TO YOU ON MARCH 17 OR AN ALTERNATE DATE OF YOUR CHOICE. PLEASE LET US KNOW YOUR PREFERENCE.
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KOSMOS-936 QUESTIONS:

1. WHAT WAS THE TOTAL PRESSURE WITHIN THE SPACECRAFT AND SYNCHRONOUS CONTROL MOCKUP, AND HOW DID IT CHANGE DURING THE MISSION?
2. WERE THE VIVARIUM ANIMALS FED 45 GRAMS ONCE A DAY POSTFLIGHT?
3. WERE THE OMEGA BIOS ANIMALS SACRIFICED BEGINNING AT 11:00 A.M. AND ALTERNATING WITH THE SACRIFICE OF THE VIVARIUM ANIMALS?
4. WHAT WAS THE TIME AND DATE PRE- AND POSTFLIGHT STRESSES (I.E., ACCELERATION, VIBRATION, SHOCK) WERE APPLIED TO THE SYNCHRONOUS CONTROL SPECIMENS?
5. WERE ALL SPECIMENS (I.E., RATS AND DROSOPHILA) STRESSED TOGETHER?
6. WHEN WERE THE RATS LOADED INTO THE MOCKUP AND THE CRAFT SEALED?
7. WHAT MATERIAL IS USED TO SUTURE RATS AFTER IMPLANTING VARIOUS DEVICES?
8. WHICH LIPIDS IN THE RATS' LIVERS WILL BE ANALYZED

QUANTITATIVELY (I.E., TOTAL LIPIDS, CHOLESTEROL, PHOSPHO-LIPIDS, NEUTRAL GLYCERIDES, ETC.) BY SOVIET OR OTHER INVESTIGATORS?

9. HAVE YOU ARRANGED THE FLIGHT SCHEDULE FOR RETURN OF U.S. GROUND SUPPORT EQUIPMENT? PLEASE INCLUDE AIR BILL NUMBERS IN ALL TELEGRAMS ANNOUNCING SHIPMENTS.

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KOSMOS 1980 QUESTIONS:

1. BEHAVIOR EXPERIMENTS WITH RATS:

1.1 WHEN WILL ANIMALS BE SACRIFICED?

1.2 CAN THEY BE HELD AND TESTED IN FLIGHT-TYPE
----- HARDWARE THROUGHOUT THE POSTFLIGHT TEST PERIOD?

1.3 HOW MANY WEEKS BEFORE LAUNCH WILL ANIMALS BE
----- AVAILABLE FOR TRAINING?

1.4 HOW MANY HOURS/DAY WILL ANIMALS BE AVAILABLE
----- FOR TRAINING?

1.5 WILL FLIGHT-TYPE HARDWARE BE AVAILABLE FOR
----- PREFLIGHT TRAINING OF ANIMALS?

1.6 WHAT IS THE PLANNED DURATION, FREQUENCY, AND
----- DISTRIBUTION OF LIGHT FLASHES?

1.7 WHAT IS THE TIME PERIOD BETWEEN LIGHT FLASHES AND
----- FOOD PRESENTATION?

1.8 IS IT POSSIBLE TO MODIFY THE BEHAVIORAL STIMULI
----- (DURATION, FREQUENCY, ETC.) BASED ON U.S.
----- PROPOSALS?

1.9 IS IT POSSIBLE TO INCLUDE AUDITORY STIMULI?

1.10 DO YOU PLAN TO CONDITION THE ANIMALS TO THE
----- STIMULI PREFLIGHT OR DURING THE FLIGHT?

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1.11 HOW SOON AFTER THE FLIGHT CAN THE ANIMALS
----- BE TESTED ON THE BEHAVIORAL PROGRAM TO WHICH
----- THEY WERE TRAINED PRE-FLIGHT?

2. BIORHYTHM EXPERIMENTS WITH RATS:

2.1 HOW OFTEN WILL TEMPERATURE DATA BE RECORDED?

2.2 HOW OFTEN WILL BODY MOVEMENT BE RECORDED?

2.3 WHEN WILL ANIMALS BE SACRIFICED?

3. EMBRYOLOGICAL EXPERIMENTS WITH RATS:

3.1 WHAT WEIGHT AND AGE OF RATS WILL BE USED?

3.2 WHAT IS THE SACRIFICE SCHEDULE OF ADULTS AND
----- YOUNG?

3.3 CAN TOTAL BODY COMPOSITION STUDIES BE PERFORMED
----- ON FEMALES, FOR COMPARISON WITH TOTAL BODY
----- STUDIES ON MALES?

3.4 WHAT EMBRYO TISSUE IS AVAILABLE (I.E., WHOLE
----- EMBRYO OR PIECES)?

3.5 WHAT IS THE LIGHT-DARK CYCLE FOR THE EMBRYOLOGY
----- UNIT?

4. TOTAL BODY COMPOSITION FOR RATS:

4.1 IS IT POSSIBLE TO OBTAIN FIVE WHOLE RATS FOR U.S.
----- INVESTIGATORS?

4.2 IF ABOVE ANSWER IS "NO", IS IT POSSIBLE TO OBTAIN
----- BODY COMPOSITION DATA FROM WHOLE RATS IF A U.S.
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----- INVESTIGATOR IS PRESENT IN MOSCOW AT THE TIME OF
----- RECOVERY AND DOES NOT REQUIRE RETURN OF WHOLE RAT
----- TO U.S.?

4.3 WILL SOME OF THE RATS FROM THIS GROUP BE KEPT
----- ALIVE FOR 25 DAYS POSTFLIGHT?

4.4 CAN WE INJECT LABELED ISOTOPES PREFLIGHT OR
----- POSTFLIGHT?

5. MUSCULOSKELETAL STUDIES WITH RATS:

5.1 WILL KIDNEYS BE AVAILABLE FROM ALL TEN OF THESE
----- RATS?

5.2 WILL KIDNEYS BE AVAILABLE FROM ANY OTHER GROUPS
----- OF RATS?

5.3 WILL SOME OF THE RATS FROM THIS GROUP BE KEPT

ALIVE FOR 25 DAYS POSTFLIGHT?

5.4 CAN WE INJECT LABELED ISOTOPES PREFLIGHT OR
----- POSTFLIGHT?

6. EMBRYOLOGICAL EXPERIMENTS WITH JAPANESE QUAIL EGGS:

6.1 HOW WILL THE EGGS BE HELD (I.E., TEMPERATURE,
----- HUMIDITY, ROTATION, LIGHT, SOUND LEVEL)?

6.2 IS IT POSSIBLE TO HAVE ELECTRIC POWER AND VOLUME
----- ALLOCATED FOR A U.S. SUPPLIED FETAL HEARTBEAT
----- DETECTOR?

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6.3 WHAT TISSUE IS AVAILABLE (I.E., WHOLE EMBRYOS OR
----- PIECES)?

6.4 WHAT IS THE SACRIFICE SCHEDULE (I.E., PRE- AND
----- POST-HATCHING)?

6.5 ARE THERE ANY PLANS TO INTRODUCE FOREIGN MATERIAL
----- INTO EGGS?

7. DROSOPHILA EXPERIMENT

7.1 WHAT IS THE QUANTITY, AGE, AND SEX OF DROSO-
----- PHILA PLANNED FOR THIS FLIGHT?

7.2 IS IT POSSIBLE TO PROVIDE CONTINUOUS TEMPERATURE
----- MEASUREMENT FOR THE DROSOPHILIA?

8. EXPERIMENTS WITH HIGHER PLANTS

8.1 WHAT ARE THE DIMENSIONS AND CONFIGURATION OF THE
----- TEN INDIVIDUAL COMPARTMENTS OF THE PLANT HOLDING
----- UNIT?

8.2 ARE THE COMPARTMENTS INTERCONNECTED OR ENTIRELY
----- SEPARATE UNITS?

8.3 IS IT POSSIBLE TO PROGRAM THE LIGHT SOURCE TO
----- PROVIDE FOUR SEPARATE LIGHT REGIMENS; I.E., LONG
----- DAY, SHORT DAY, CONTINUOUS LIGHT, CONTINUOUS
----- DARKNESS?

8.4 WHAT ARE THE SPECTRAL CHARACTERISTICS AND
----- INTENSITY OF THE LAMPS?

8.5 WILL IT BE POSSIBLE TO TAKE INFLIGHT PHOTOGRAPHS
----- OR TIME-LAPSE FILMS?

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8.6 HOW WILL YOU ACHIEVE FIXATION OF CERTAIN SPROUTS

----- AT VARIOUS STAGES OF DEVELOPMENT, WITHOUT AFFECT-
----- ING THE GROWTH OF REMAINING SPROUTS?

8.7 WILL THE PLANTS USED IN THE EXPERIMENT BE GROWN

----- IN SOIL OR SAND, OR WILL THEY BE GROWN ASEPTICALLY
----- IN NUTRIENT MEDIUM?

8.8 WILL THE PLANTS BE SPROUTED IN SPACE (I.E.,

----- DELAYED WATERING) OR SPROUTED PREFLIGHT?

8.9 WHAT IS THE EXPECTED TIME BETWEEN LOADING PLANT

----- EXPERIMENT ON SPACECRAFT AND LAUNCH? WHAT IS THE
----- MAXIMUM TIME?

8.10 DO YOU STILL PLAN TO CONTROL TEMPERATURE AT 25

----- PLUS/MINUS ONE DEGREES CENTIGRADE THROUGHOUT THE
----- EXPERIMENT?

8.11 WILL THERE BE PROVISIONS FOR MONITORING AND

----- CONTROL OF OXYGEN AND CARBON DIOXIDE LEVELS
----- WITHIN THE CHAMBERS?

8.12 ARE THERE ANY PLANS TO LABEL INSPIRED GASES? IF

----- NOT, WILL SUCH LABELING BE POSSIBLE?

8.13 ARE THERE ANY PLANS TO INCLUDE A PLANT CENTRI-

----- FUGE? IF YES, WHAT WILL BE THE ORIENTATION OF
----- THE CENTRIFUGE IN RELATION TO THE LAUNCH AXIS,
----- AND WHAT WILL BE THE G-LEVEL?

8.14 ARE THERE ANY PLANS TO INCLUDE LOWER PLANTS,

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----- SUCH AS FUNGI?

9. RADIATION PHYSICS AND RADIOBIOLOGY EXPERIMENTS

9.1 DO DR. KOVALEV AND HIS COLLEAGUES PLAN TO FLY A

----- RADIATION SHIELDING AND DOSIMETRY EXPERIMENT?

9.2 ARE THERE ANY RADIOBIOLOGY INVESTIGATIONS

----- PLANNED?

10. GENERAL QUESTIONS

10.1 IS IT POSSIBLE TO COMBINE THE TWO U.S. DEDICATED

----- VOLUMES INTO ONE CONTINUOUS VOLUME?

10.2 WHAT ARE THE LIGHT LEVELS AND LIGHT SCHEDULE TO
----- ALL SPECIMENTS?

10.3 HOW "LIGHT-TIGHT" ARE ALL OF THE SPECIMEN
----- HOLDING UNITS, BOTH FOR PLANTS AND ANIMALS?

10.4 ARE NOISE LEVEL AND VIBRATION RECORDED DURING
----- THE FLIGHT?

BEST REGARDS,

DAVID L. WINTER, M.D.
NASA DIRECTOR FOR LIFE SCIENCES

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